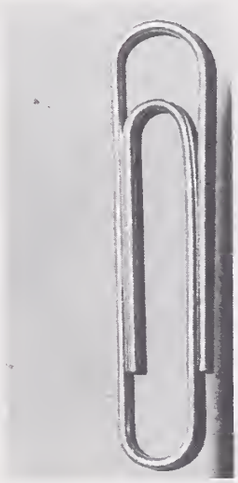
SCREWWORM STRONGHOLD ATTACKED

The screwworm fly has a bluish-green body and an orange-colored head. It is about twice the size of a housefly. Female (right) lays its eggs (about 250) on the edges of cuts or wounds of livestock and other warm-blooded animals, including man. BN-6171X



Larvae hatching from eggs look like tiny screws. They tear away at living flesh and often kill untreated animals. Grown larvae drop to ground and enter pupal stage in the soil. Flies emerge from pupa to begin new cycle...about 21 days from egg stage. N-37903

Goal -- eradication of costly southwestern livestock pest

The screwworm, a livestock menace since pioneer days, faces determined Federal, State, and private efforts to eradicate it from large areas of the Southwest. A peacetime application of atomic energy promises to bring an end to annual livestock industry losses in the area estimated to range from $25 million to $100 million. Radioactive cobalt is being used to sexually sterilize millions of screwworm flies reared weekly in a modern, efficient plant near Mission, Tex. As a key weapon in the vigorous campaign against the pest, the sterile flies are systematically airdropped over thousands of square miles in the eradication area.

The Southwest program was organized in February 1962. The cooperators in the effort are the Southwest Animal Health Research Foundation (representing livestock producers) the Texas Animal Health Commission, and many public and private organizations in Texas, Louisiana, Arkansas, Oklahoma, and New Mexico and the Animal Disease Eradication Division of USDA's Agricultural Research Service. Agricultural officials and livestock producers of the Republic of Mexico are cooperating in eradication activities along the international border.

The plan is to eradicate the screwworm population in areas of Texas and New Mexico where the insect overwinters. As eradication is accomplished there, an effective artificial barrier against reinfestation will be developed and established along a portion of the United States-Mexico border by releasing sterile screwworm flies and by controlling livestock shipments.

The screwworm is a constant drain on the multibillion dollar livestock industry of the Southwest and on its wildlife population. Estimated loss to the Southwestern livestock industry caused by the pest ranges from $20 million to $100 million annually. OKLA-10613

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Pets are often the victims of screwworm attacks. Small cuts and scratches, or even tick bites, invite egg laying by the female fly. N-6714

The sterile fly technique for insect eradication – developed by U.S. Department of Agriculture scientists and used successfully to eradicate screwworms from the Southeast in 1957-59 – involves weekly aerial release of millions of the laboratory-reared, sexually sterile screwworm flies. Native female flies that have mated with sterile males deposit eggs that do not hatch. Continued release of sterile flies in infested areas eventually eliminates the native screwworm population.

The Southwest Animal Health Research Foundation provided the funds to build the plant at Moore Air Base near Mission, Tex.

The plant is designed to produce from 50 to 75 million sterile screwworm flies each week of the year. Every operation is timed to coincide with the normal life cycle of the screwworm. All plant operations are on the ground floor level for greater efficiency. Security measures to prevent the escape of any fertile flies are strictly enforced 24 hours a day.

Maintaining a barrier to prevent reinfestation of the eradication areas will require continued release of sterile flies. But program officials emphasize that the release of the flies is only part of the job. Livestock owners and handlers within and beyond the barrier zone are urged to: (1) Examine animals regularly for any scratch, cut, or open wound; (2) Manage livestock in a way that prevents injuries, and avoids wounds from handling, surgery, birth, or other causes, especially during warm weather when screwworms are more abundant; (3) Collect maggots or eggs that may be present in wounds, place them in alcohol or water, and give them to the county agent, livestock inspector, or veterinarian for positive identification; (4) Treat wounds with EQ 335, smear 62, or smear containing ronnel; (5) Apply approved preventive sprays, following directions provided on manufacturer's label; (6) Closely observe restrictions on animal shipments; (7) Make sure that purchased animals are free from screwworms when they are loaded at point of origin, (8) Cooperate with neighbors; encourage them to follow precautions; (9) Maintain vigilance for screwworms, even after they have become a rarity in your area, so that small outbreaks that appear can be quickly and economically snuffed out. The Southeast is screwworm-free only because of excellent cooperation by producers and other members of the livestock industry who have detected and reported small outbreaks that have occurred since eradication of overwintering screwworms in 1959.

Screwworm flies selected from strains most likely to survive and compete successfully with native flies were shipped from USDA's Entomology Laboratory at Kerrville, Texas, to start the fly factory colonies. About 3 to 5 percent of the fly production of the new plant is used for brood stock. N-36436

About 56,000 pupae are placed in large screened cages to provide fertile flies for mass egg production. Paper toweling streamers are for the flies to rest on when they emerge from pupae. The cages are kept in a warm, dark room for about 7 days...until the females are ready to lay their eggs. N-46593

The cages are then moved to another room where a heated tray with a special meat mixture is placed in each cage. The females lay shingled batches of eggs near the medium. The eggs are harvested in a room kept cold to immobilize the adults. N-46600

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Converted hangar and nearby buildings house modern automated plant capable of producing more than 75 million sexually-sterile screwworm flies each week.

Egg masses are collected, weighed and placed in small plastic containers to hatch in about 12 hours. The larvae are then transferred to trays of ground meat and blood plasma in the larvae starting section. More than 3½ million larvae are started every 8 hours. N-46603

After 24 hours of feeding on the special starting food the larvae go into large vats. A mixture of ground meat, citrated whole beef blood, and water is piped into the vats and kept at a temperature of 99 degrees F by controlled heating elements. N-46631

Larvae feed for 3-5 days and migrate out of the vat for the change to pupae--the next stage of their life cycle. Funnels on the sides of the vats direct the crawling larvae to water-conveying troughs in the floor under the grates. N-46650

The larvae pupate in trays of sawdust. Attached to a monorail, the racks of trays are pushed into pupation rooms. Some larvae change to pupae within 16 hours, others take longer. At the end of 16 hours the trays are removed from the pupation room, so that the insects may be separated from the sawdust. N-46646

Airdrop of sterile flies based at Mission, Texas, is the heart of the cooperative Southwest Screwworm Eradication Program now in progress. BN-17965

The trays are emptied onto a machine that screens out the sawdust. The pupae and any remaining larvae are then passed under fluorescent lights. Larvae crawl away from the lights and are collected to complete pupation. N-46643

Trays of pupae marked with pupation date are stacked on racks and held in a dark room at 80 degrees F and about 95 percent humidity for 5½ days before being sexually sterilized. Here an attendant examines the color of pupae which changes from light red to black as pupae mature. N-30250

Exposure to gamma rays to cause sexual sterilization is handled by remote control. Aluminum canister containing about 18,000 pupae is placed on hoist and manipulated into one of the Cobalt-60 chambers. After exposure to about 8,000 roentgens the canister is removed and conveyed to the packaging room. BN-17286

Continued quality check on the flies is kept by sampling each batch of irradiated pupae and observing sexual vigor and length of life of the flies. Effectiveness of the irradiation on fertility of eggs is also checked. N-46626

This assembly line packages 50 cartons of irradiated pupae per minute. The cartons are automatically assembled, filled, closed. Then they are placed on trays and stored in portable racks for delivery by truck or plane to distribution centers. N-46637

Cartons of sterile flies are loaded on planes and dispersed systematically over the infested areas. A special device opens the cartons as they are released from the plane at predetermined intervals. Rate of release ranges from 200 to 1,000 sterile flies per square mile. BN-17990

Prompt treatment of screwworm-infested eye wound can save this voluoble Hereford cow from serious injury. N-36421

Lamb's injured face comes from grazing on spiny cactus. Such wounds invite serious screwworm domoge or death unless animals are located and treated. N-36442

Livestock owners con help insure the success of eradication measures now and in the future by collecting maggots or eggs thot moy be present in wounds and sending them to the county agent, livestock inspector, or veterinarian for positive identification. N-37906

Livestock inspector certifies thot shipment of cattle from an area of possible screwworm infestation has been sprayed and all wounds treoted. Certificote is necessary before cattle are permitted into a fly-free area within the screwworm eradication region. Interstate movements are generally hondled by fixed stations operated by Federol inspectors neor Stote lines. N-30266

Magozines and newspopers may obtoin glossy prints of these photographs in ony size up to 8×10 from the Photography Division, Office of Information, U.S. Deportment of Agriculture, Woshington 25, D. C. Others moy purchose prints in any size from the some oddress. Prints in 8×10 size are $1.15 each.

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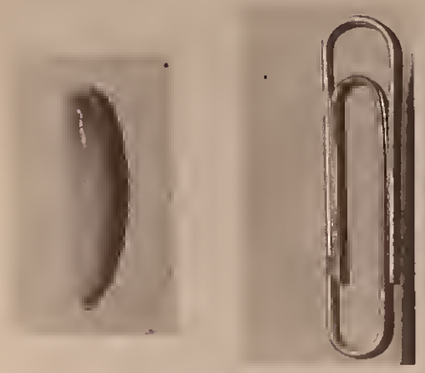

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